REMARKS

STATUS AND SUMMARY

The Examiner has allowed claims 15-17.

The Examiner has rejected claims 1-6 and 8-13 under 35 U.S.C. § 102(b) on the stated basis that they are anticipated by U.S. Patent No. 5,398,012 to *Derby et al.*

The Examiner has rejected claims 7 and 14 under 35 U.S.C. § 103(a) on the stated basis that they are unpatentable over U.S. Patent No. 5,398,012 to *Derby et al.*

The Examiner has rejected claim 18 under 35 U.S.C. § 103(a) on the stated basis that it is unpatentable over U.S. Patent No. 5,398,012 to *Derby et al.* in view of U.S. Patent No. 5,101,348 to *Arrowood et al.*

Claims 1 and 10 have been amended. Claims 19 through 23 have been added Claims 1 through 23 remain pending in the application.

REMARKS

At the outset, the Applicants wish to thank the Examiner for the substantive effort and detailed remarks in this case. The Applicants also acknowledge the Examiner's allowance of claims 15-17.

The Examiner has set forth three groups of rejections in this case. First, the Examiner has rejected claims 1-6 and 8-13 under 35 U.S.C. § 102(b) on the stated basis that they are anticipated by U.S. Patent No. 5,398,012 to *Derby et al.* Applicants respectfully traverse. Claims 1 and 10 each indicate that the present invention performs the steps of "identifying a plurality of intra-area least cost paths from the topology information," and "assembling the intra-

area least cost paths into an end-to-end path." As indicated in paragraphs 0077 through 0081 of the Detailed Description of the application, the Applicants' invention searches a first area to determine the least cost path or paths within that area. Each area least cost path is then added to an end-to-end path. The exit point associated with each least cost path is then used as the entry point for an adjoining area for which a new least cost path determination is performed from the designated entry point to all exit points. The process iterates sequentially until the area containing the destination is reached. In contrast, *Derby* simultaneously computes the shortest path from all entry points of an area to all exit points of an area for all areas that are potentially along a shortest path. *Derby*, col. 6, lns. 3-33. "AA1.1, AA1.2, and AA1.3 determine the best route to ES-A. This is done by accumulating weights of transmission links over all possible paths for each of them to ES-A. ... Meanwhile in MAG2, AA2.1, AA2.2, and AA2.3 have been determining the best route from each of them to ES-B. This is done in the same manner as it was in MAG1 for routes to ES-A. In addition, AA2.1, AA2.2, and AA2.3 are determining the best route from each of them to each of the [entry points from] MAG1." *Derby*, col. 6, lns. 3-6, 14-19. *Derby* does not disclose or suggest the sequential best path determination from an entry point to all exit points of an area. Rather, *Derby* discloses the simultaneous best path determination from all entry points to all exit points of all areas. It does not disclose the identification of intra-area least cost paths and assembly of a subset of those paths into an end-to-end path.

In practice, since it examines all possible paths between source and destination, the method and apparatus described in *Derby* will typically result in many more paths being examined than the method and apparatus of the present invention, which does not require that all paths be examined. By computing fewer paths, the method of the present invention may be more efficient, more expedient and have more applications than that disclosed in *Derby*.

Although Applicants believe that the original claims are sufficiently distinct from the disclosure of *Derby*, claims 1 and 10 have been amended herein in order to emphasize the present invention's feature that the step of identifying a plurality of intra-area least cost paths from the topology information is performed sequentially. Since this limitation was already implied by the assembly step, the amendment is not narrowing, is not required for patentability, and does not introduce new matter. Claims 2-6, 8, and 9 depend from claim 1 and thus contain all of the limitations of claim 1. Claims 11-13 depend from claim 10 and thus contain all of the limitations of claim 10. Accordingly, Applicants submit that claims 1-6 and 8-13 are distinguishable from *Derby*, and that they are therefore patentable.

Second, the Examiner has rejected claims 7 and 14 on the stated basis that they are unpatentable under 35 U.S.C. § 103 over U.S. Patent No. 5,398,012 to *Derby et al.* Claim 7 depends from claim 1 and thus contains all of the limitations of claim 1. Claim 14 depends from claim 10 and thus contains all of the limitations of claim 10. As noted above, claims 1 and 10 are directed to an invention that performs the steps of identifying a plurality of intra-area least cost paths from the topology information and assembling a subset of the plurality of intra-area least cost paths into an end-to-end path. *Derby* does not disclose or suggest such features. Accordingly, Applicants submit that claims 7 and 14 are distinguishable from *Derby*, and that they are therefore patentable.

Third, the Examiner has rejected claim 18 under 35 U.S.C. § 103(a) on the stated basis that it is unpatentable over U.S. Patent No. 5,398,012 to *Derby et al.* in view of U.S. Patent No. 5,101,348 to *Arrowood et al.* Claim 18 indicates that the present invention is a method of identifying a path between a starting address and a destination address in a routing domain by, *inter alia*, specifying an ordered list of routing events. As indicated in paragraph 0073 of the

Detailed Description of the application, the Applicant's invention responds to the receipt of a routing update by adding the update "to one of the link lists of events maintained for the last [Contextual Information Structure] in the [Context Access Tree], as well as to the [Raw Advertisements Table] that keeps track of all the routing events received." In contrast, *Derby* and *Arrowood*, whether alone or in combination, neither disclose nor suggest specifying an ordered list as a historical record of all routing events that have been received after the time a given routing information context was constructed. Rather, *Derby* discloses the reception of one or more ARP messages by an access agent, and *Arrowood* discloses a method for keeping a topology database up-to-date and consistent across nodes as routing events are being generated by updating a network topology in accordance with a next routing event. As a result, neither *Derby* nor *Arrowood* teaches "specifying an ordered list of routing events" as a historical record of all routing events. Accordingly, Applicants submit that claim 18 is distinguishable from *Derby* in view of *Arrowood*, and that it is therefore patentable.

The present invention also contains additional features not taught by either *Derby* or *Arrowood*. For example, neither *Derby* nor *Arrowood* teaches identifying a subset of intra-area least cost paths in a first area that are candidate for extension and extending said candidate intra-area least cost paths by concatenating the candidate intra-area least cost paths with their extensions. New claim 19 emphasizes this feature. In addition, neither *Derby* nor *Arrowood* teaches selecting at least one identified exit point and its associated least cost path segments to result in at least one selected first area least cost segment towards reaching the destination address. New claims 20 and 22 emphasize this feature. Moreover, neither *Derby* nor *Arrowood* teaches, for at least one selected exit point and its associated least cost path segments, identifying a second area within the domain to which the at least one selected exit point is connected, and

selecting an identified exit point in the second area and its associated least cost segment and concatenating the two segments together. New claims 21 and 23 emphasize this feature.

Applicants submit that the response and amendments set forth herein are sufficient to explain the differences between the claimed invention and the prior art cited by the Examiner. Accordingly, allowance of all of the claims is respectfully requested. However, in the event that the Examiner is not prepared to grant such an allowance, the undersigned attorney respectfully requests an interview with the Examiner before the next Office Action.

AUTHORIZATION

No fee is believed to be required for the submission of this Amendment and Response. The Commissioner is hereby authorized to charge any additional fees which may be required for this Amendment, or credit any overpayment, to deposit account no. 50-0436.

Respectfully submitted,

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VERSION WITH MARKING TO SHOW CHANGES

IN THE CLAIMS:

1. (Amended) A method of identifying a path of travel for a packet in a multi-area domain operated according to a link state routing protocol, comprising the steps of:

receiving topology information from a plurality of individual areas in a domain;

sequentially identifying a plurality of intra-area least cost paths from the topology information; and

sequentially assembling a subset of the plurality of intra-area least cost paths into an end-to-end path [between a starting address and a destination address].

10. (Amended) A computer-readable carrier containing instructions thereon that are capable of instructing a computing device to perform the steps of:

receiving topology information from a plurality of individual areas in a multi-area routing domain;

sequentially identifying a plurality of intra-area least cost paths from the stored topology information; and

sequentially assembling a subset of the plurality of intra-area least cost paths into an end-to-end path [between a starting address and a destination address].

Please add claims 19 through 23:

19. (New) A method of identifying a path of travel for a packet in a multi-area domain operated according to a link state routing protocol, comprising the steps of:

receiving topology information from a plurality of individual areas in a domain;

computing in a first area a plurality of intra-area least cost paths from the topology information;

identifying in the first area a subset of intra-area least cost paths that are candidates for extension; and

concatenating the candidate intra-area least cost paths with their extensions into an extended path between a starting address and towards a destination address.

20. (New) The method of claim 19 wherein the identifying step comprises:

identifying at least one exit point from a first area through which the destination address is reachable;

constructing at least one least cost path segment within the first area between the starting address and at least one of the exit points; and

selecting at least one of the identified exit points and its associated least cost path segments to result in at least one selected first area least cost segment towards reaching the destination address.

21. (New) The method of claim 20 wherein the identifying step further comprises:

for at least one of the selected exit points and its associated least cost path segments, identifying a second area within the domain to which the at least one exit point is connected;

identifying at least one exit point from the second area through which the destination address is reachable;

constructing at least one least cost path segment within the second area between the at least one exit point of the first area and at least one exit point of the second area; and

selecting at least one of the identified exit points in the second area and its associated least cost segments within the second area to result in at least one selected second area least cost segment;

and wherein the concatenating step comprises connecting one of the selected first area least cost segments and one of the selected second area least cost segments.

22. (New) The method of claim 1 wherein the identifying step comprises:

identifying at least one exit point from a first area through which the destination address is reachable;

constructing at least one least cost path segment within the first area between the starting address and at least one of the exit points; and

selecting at least one of the identified exit points and its associated least cost path segments to result in at least one selected first area least cost segment towards reaching the destination address.

23. (New) The method of claim 22 wherein the identifying step further comprises:

for at least one of the selected exit points and its associated least cost path segments, identifying a second area within the domain to which the at least one exit point is connected;

identifying at least one exit point from the second area through which the destination address is reachable;

constructing at least one least cost path segment within the second area between the at least one exit point of the first area and at least one exit point of the second area; and

selecting at least one of the identified exit points in the second area and its associated least cost segments within the second area to result in at least one selected second area least cost segment;

and wherein the assembling step comprises connecting one of the selected first area least cost segments and one of the selected second area least cost segments.